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FILE 'HCAPLUS' ENTERED AT 18:09:22 ON 11 MAY 2007

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FILE COVERS 1907 - 11 May 2007 VOL ISS ISS

FILE LAST UPDATED: 10 May 2007 (20070510/ED)

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FILE COVERS 1907 - 11 May 2007 VOL 146 ISS 21

FILE LAST UPDATED: 1 May 2007 (20070501/ED)

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This file contains CAS Registry Numbers for easy and accurate

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(FILE 'HOME' ENTERED AT 17:10:24 ON 11 MAY 2007)

FILE 'HCAPLUS' ENTERED AT 17:10:40 ON 11 MAY 2007

L1 1 SEA ABB=ON PLU=ON US2004214088/PN

FILE 'REGISTRY' ENTERED AT 17:13:19 ON 11 MAY 2007

L2 43 SEA ABB=ON PLU=ON (105-58-8/BI OR 107-31-3/BI OR

FILE 'HCAPLUS' ENTERED AT 17:30:06 ON 11 MAY 2007

L3 QUE ABB=ON PLU=ON PORO? OR MICROPORO?

L4 QUE ABB=ON PLU=ON PERMEA? OR PERFORAT? OR SIEVE? OR
PERVIOUS?

L5 QUE ABB=ON PLU=ON POLYM? OR COPOLYM? OR RESIN? OR
HOMOPOLYM?

L6 35290 SEA ABB=ON PLU=ON (L3 OR L4) (3A) L5

L7 QUE ABB=ON PLU=ON FILM? OR THINFILM? OR LAYER? OR
OVERLAY?

L8 5311 SEA ABB=ON PLU=ON L6 (3A) L7

L9 QUE ABB=ON PLU=ON ?MICROSCAL? OR ?MICROSIZ? OR
?MICROMATERIAL? OR ?MICROCHEM? OR ?MICRO(A) (SCAL? OR
CHEM? OR SIZ? OR MATERIAL?)

L10 21 SEA ABB=ON PLU=ON L8 AND L9

L11 QUE ABB=ON PLU=ON POLYETHYLENE# OR PE OR POLYPROPYLENE#
OR PP OR POLYIMIDE# OR PI OR POLYSULFONE# OR POLYSULPHON
E# OR PSU

L12 QUE ABB=ON PLU=ON POLYURETHANE# OR PUR OR POLYVINYLCHLO
RIDE# OR POLY(W) VINYLCHLORIDE# OR PVC OR CELLULOSE# OR
NYLON# OR POLYACRYLONITRILE# OR PAN

L13 QUE ABB=ON PLU=ON POLYVINYLIDENE (2A) FLUORIDE# OR
POLY(W) VINYLIDENE (W) FLUORIDE# OR PVDF OR POLYTETRAFLUOROE
THYLENE# OR PTFE

L14 QUE ABB=ON PLU=ON FIRST? OR 1ST OR 1(W) ST OR PRIMARY?

L15 QUE ABB=ON PLU=ON SECOND? OR 2ND OR 2(W) ND

L16 QUE ABB=ON PLU=ON ELECTROLY?
 L17 QUE ABB=ON PLU=ON BATTERY
 L18 20748 SEA ABB=ON PLU=ON (L11 OR L12 OR L13) (L) L16
 L19 2 SEA ABB=ON PLU=ON L10 AND L16
 L20 1 SEA ABB=ON PLU=ON L19 AND (L11 OR L12 OR L13)
 L21 229 SEA ABB=ON PLU=ON L8 AND L18
 L22 33 SEA ABB=ON PLU=ON L21 AND L14
 L23 18 SEA ABB=ON PLU=ON L22 AND L15
 L24 2 SEA ABB=ON PLU=ON L19 OR L20
 L25 17 SEA ABB=ON PLU=ON L23 NOT L24
 L26 15 SEA ABB=ON PLU=ON L22 NOT (L24 OR L25)

=> d l24 ibib abs hitstr hitind 1-2

L24 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2004:905471 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:382157
 TITLE: Method of fabrication of composite polymer
 electrolyte of different morphologies
 for lithium secondary battery
 INVENTOR(S): Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun;
 Chang, Soon Ho
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|-------------------|
| ----- | ---- | ----- | ----- | |
| US 2004214088 | A1 | 20041028 | US 2003-748363 | 200312 29 |
| KR 2004092188 | A | 20041103 | KR 2003-26419 | 200304 25 |
| JP 2004327422 | A | 20041118 | JP 2003-431458 | 200312 25 |
| CN 1610169 | A | 20050427 | CN 2003-10125472 | 200312 31 |
| PRIORITY APPLN. INFO.: | | | KR 2003-26419 | A 200304 25 |

AB A composite polymer **electrolyte** for a lithium secondary battery and a method of manufacturing the same are provided. The composite polymer **electrolyte** includes a composite film structure which includes a first **porous polymer film** with good mech. properties and a second **porous polymer film** with **submicro-scale** morphol. of more compact porous structure than the first porous polymer structure, coated on a surface of the first **porous polymer film**, and an **electrolyte** solution impregnated into the composite film structure. The different morphologies of the composite film structure enable to an increase in mech. properties and ionic conductivity. Furthermore, the charge/discharge cycle performance and stability of a lithium metal polymer secondary battery are enhanced.

IC ICM H01M010-40
INCL 429309000; 429316000; 429317000; 429314000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer **electrolyte** different morphol lithium secondary
battery
IT Secondary batteries
(lithium; method of fabrication of composite polymer
electrolyte of different morphologies for lithium
secondary battery)
IT Battery **electrolytes**
Composites
Polymer morphology
(method of fabrication of composite polymer **electrolyte**
of different morphologies for lithium secondary battery)
IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamide fibers, uses
Polyimides, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
RL: DEV (Device component use); USES (Uses)
(method of fabrication of composite polymer **electrolyte**
of different morphologies for lithium secondary battery)
IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4,
Ethyl formate 109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina,
uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate
9002-84-0, Ptfе 9002-86-2, Polyvinyl chloride
9002-88-4, Polyethylene 9003-07-0, Polypropylene
9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl acrylate
9003-32-1, Polyethyl acrylate 9003-42-3, Polyethyl methacrylate
9003-49-0, Polybutylacrylate 9003-63-8, Polybutylmethacrylate
9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 12003-67-7,
Aluminum lithium oxide allio2 13463-67-7, Titania, uses
14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses
21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdф
25014-41-9, Polyacrylonitrile 25322-68-3, Peo
25322-69-4, Polypropylene oxide 28960-88-5,
Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9,
Lithium triflate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(method of fabrication of composite polymer **electrolyte**
of different morphologies for lithium secondary battery)
IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
872-50-4, n-Methylpyrrolidone, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method of fabrication of composite polymer **electrolyte**
of different morphologies for lithium secondary battery)

L24 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1978:580757 HCAPLUS Full-text
DOCUMENT NUMBER: 89:180757
TITLE: Localization of micropores in polymer films
AUTHOR(S): Geymayer, W. F.; Grasenick, F.

CORPORATE SOURCE: Zent. Elektronenmikrosk. Graz, Graz, Austria
 SOURCE: Electron Microsc., Pap. Int. Congr., 9th (1978),
 Volume 1, 490-1. Editor(s): Sturgess, J. M.
 Microsc. Soc. Canada: Toronto, Ont.
 CODEN: 39ERA7
 DOCUMENT TYPE: Conference
 LANGUAGE: English

AB The pore channels in a swollen polymer matrix are marked and stabilized for electron microscopic examination by filling the active pore-volume with insol. metal salts or dense metallic ppts. AgCl was precipitated in the micropores of an osmotic membrane by placing a NaCl solution on 1 side and AgNO3 on the other and repeatedly changing the direction of flow. Polymer films coated on metal substrates are investigated by inserting the substrate as a cathode in a suitable electrolyte and filling the reactive pore-volume by electrolytic separation. After filling the pore channels, the metal deposition widens in a mushroom shape, clearly marking the pore entry.

CC 36-6 (Plastics Manufacture and Processing)

IT **Polymers**, preparation
 RL: PREP (Preparation)
 (microporous films, method of marking pores
 for, for electron microscopy)

IT Pore
 (micro-, size and location of, in polymer
 films, method for marking of)

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L25 ANSWER 1 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:1073250 HCAPLUS Full-text
 DOCUMENT NUMBER: 145:422611
 TITLE: Composite proton exchange membrane for gas
 permeation-resistant fuel cell, and its
 manufacture
 INVENTOR(S): Mu, Shichun; Chen, Lei; Pan, Mu; Yuan, Runzhang
 PATENT ASSIGNEE(S): Wuhan University of Technology, Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,
 13pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|--------------|
| ----- | ---- | ----- | ----- | |
| CN 1707837 | A | 20051214 | CN 2005-10018751 | 200505 20 |
| PRIORITY APPLN. INFO.: | | | CN 2005-10018751 | 200505 20 |

AB The title membrane is a 3-layered porous polymer reinforced composite exchange membrane having two 1st water-retainable porous polymer reinforced composite exchange membranes as outer layers obtained by compositing inorg. nanoparticles and a 1st solid polymer electrolyte, and a 2nd porous polymer reinforced composite exchange membrane as an intermediate layer possessing humidifying and gas resistant functions and obtained by compositing Pt nanoparticles and a 2nd

solid polymer electrolyte. The title membrane is manufactured by (1) immersing a porous polymer membrane in ethanol for cleaning and pre-swelling; (2) drying the membrane; (3) preparing 1st solns. of 1st inorg. nanoparticles (SiO₂, TiO₂, ZrO₂, or Zr(HPO₄)) and 1st solid polymer electrolytes; (4) immersing the polymer membrane in the solution of the inorg. nanoparticles and the solid polymer electrolyte for 5-20 min; (5) taking the membrane out of the solution; (6) drying the membrane on a heating; (7) roll pressing the membrane; (8) repeating steps (4)-(7) several times to obtain the 1st membrane with required thickness; (9) dispersing Pt nanoparticles in a 2nd solution of 2nd inorg. nanoparticles and a 2nd solid polyelectrolyte; (10) immersing the ethanol treated polymer membrane in the 2nd solution for 5-20 min; (11) repeating steps (4)-(7) several times to obtain the 2nd membrane; (12) sandwiching the 2nd membrane between two 1st membranes, then sandwiching between two PTFE thin films; (13) and hot pressing at 120-135° under 0.5-4 MPa for 1-5 min, and stripping the PTFE thin films.

IC ICM H01M008-02

ICS H01M008-10; H01M002-14; C08J005-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

L25 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:983911 HCAPLUS Full-text

DOCUMENT NUMBER: 143:289420

TITLE: **Secondary** battery using porous film
type solvent-free polymer electrolyte filled
with oligomer/prepolymer electrolyte

INVENTOR(S): Kwak, Seung-Yeop; Jeon, Jae-Deok

PATENT ASSIGNEE(S): Seoul National University Industry Foundation,
S. Korea

SOURCE: PCT Int. Appl., 26 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2005081646 | A2 | 20050909 | WO 2005-KR525 | 20050226 |
| WO 2005081646 | A3 | 20060202 | | |
| W: | | | | |
| AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, | | | | |
| CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, | | | | |
| GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, | | | | |
| KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, | | | | |
| MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, | | | | |
| SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, | | | | |
| VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: | | | | |
| BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, | | | | |
| AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, | | | | |
| DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, | | | | |
| NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, | | | | |
| GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| KR 2005087263 | A | 20050831 | KR 2004-12983 | 20040226 |

PRIORITY APPLN. INFO.:

KR 2004-12983

A

20040226

- AB Provided are a solvent-free polymer **electrolyte** and a **secondary** battery employing the same. The solvent-free **polymer electrolyte** includes: a **porous film** including a **first** polymer and a **second** oligomer, the **first** polymer being at least one selected from the group consisting of **poly(vinylidene fluoride-co-hexafluoropropylene)** copolymers, polyvinylidene fluorides, polymethylmethacrylates, **polyacrylonitriles**, polyethyleneoxides, and **celluloses** having a polyether chain and the **second** oligomer being at least one selected from the group consisting of poly(ethylene oxide-co-ethylene carbonate) copolymers with at least one terminal groups substituted by a halogen atom and polyethyleneglycols with at least one terminal groups substituted by a halogen atom; and an **electrolyte** present in the pores of the porous film and including the **second** oligomer and a lithium salt. Since the solvent-free polymer **electrolyte** contains no liquid organic **electrolyte**, it is not accompanied by problems caused by leakage or evaporation of an organic solvent, unlike a gel-type polymer **electrolyte**. Furthermore, the solvent-free polymer **electrolyte** has enhanced ionic conductivity as compared to a conventional solvent-free polymer **electrolyte**.
- IC ICM H01M
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(halogenated; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
- IT Fillers
(inorg.; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
- IT Battery anodes
Battery electrolytes
Polymer electrolytes
Secondary batteries
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
- IT Carbonaceous materials (technological products)
Fluoropolymers, uses
Oligomers
RL: DEV (Device component use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
- IT Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
- IT 7439-93-2D, Lithium, intercalation compound 7791-03-9, Lithium perchlorate 9004-34-6, **Cellulose**, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 12017-96-8, Chromium lithium oxide (CrLiO₂) 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12162-79-7, Lithium manganese oxide limno₂ 12190-79-3, Cobalt lithium oxide (CoLiO₂) 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, **Pvdf** 25014-41-9, **Polyacrylonitrile** 25322-68-3, Peo 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 106818-19-3D, Ethylene carbonate-ethylene oxide copolymer, halogenated 131651-65-5 132843-44-8
RL: DEV (Device component use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer **electrolyte** filled with

oligomer/prepolymer **electrolyte**)
 IT 25608-11-1DP, chloride terminated
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
 IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)
 IT 37220-89-6, Lithium aluminate
 RL: MOA (Modifier or additive use); USES (Uses)
 (γ -; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

L25 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2005:982634 HCAPLUS Full-text
 DOCUMENT NUMBER: 143:249370
 TITLE: Manufacture of porous films with improved porosity and air permeability
 INVENTOR(S): Emori, Hideyuki; Aburaya, Aki
 PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | |
| JP 2005239773 | A | 20050908 | JP 2004-48177 | 20040224 |
| | | | | 20040224 |

PRIORITY APPLN. INFO.: JP 2004-48177

AB The films, useful for nonaq. **electrolyte** battery separators, are manufactured by kneading polymer compns. containing polyolefins and plasticizers, cooling the kneaded products, stretching the resulting sheets in ≥ 1 direction, eluting the plasticizers from the stretched products into **first** solvents, treatment of the stretched films with ultrasonic wave in nonpenetrable **second** solvents, and drying the stretched products. Thus, a composition containing **polyethylene**, Norsorex (norbornene rubber), TPE 821 (thermoplastic elastomer), and paraffin oil was kneaded, cooled, hot-pressed, biaxially stretched, treated with decane for elution of the paraffin oil, treated with ultrasonic wave in water, dried, and heat-treated for crosslinking to give a porous film with porosity 35%, air permeability (JIS P 8117) 380 s/100 cm³, and piercing strength 3.0 N.

IC ICM C08J009-26
 ICS H01M002-16; C08L023-00

CC 38-2 (Plastics Fabrication and Uses)
 Section cross-reference(s): 52

IT Drying
 Plastic films
 Plasticizers
Secondary battery separators

(manufacture of porous films with improved porosity and air permeability)

IT **Polymer blends**

RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of **porous films** with improved porosity and air permeability)

L25 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:611324 HCAPLUS Full-text

DOCUMENT NUMBER: 143:100453

TITLE: Separators for electronic devices

INVENTOR(S): Sugiyama, Masahide; Totsuka, Hiroki; Takahata, Masanori

PATENT ASSIGNEE(S): Tomoegawa Paper Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | |
| JP 2005190736 | A | 20050714 | JP 2003-428047 | 20031224 |
| | | | JP 2003-428047 | 20031224 |

PRIORITY APPLN. INFO.:

AB The separator comprises a **porous** elec. insulating **polymer** film containing polymers with **polyethylene** oxide structures and/or polymers with **polypropylene** oxide structures. Preferably, the separators contain Li salts. Such separators for **secondary** batteries, including (1) vinylidene fluoride homopolymer, (2) copolymer of vinylidene fluoride with tetrafluoroethylene, hexafluoropropylene, ethylene, propylene, and/or ethylene trifluoride, or (3) mixts. of (1) and (2) are also claimed. The electronic devices may especially be Li ion **secondary** batteries, polymer lithium batteries, aluminum **electrolytic** capacitors, or elec. double layer capacitors. The separators show low charging characteristics and excellent runnability and are suitable for mass production

IC ICM H01M002-16

ICS H01G009-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 47, 76

ST separator porous elec insulator film; lithium salt PEO porous film separator; elec double layer capacitor **polypropylene** oxide separator; **polyethylene** oxide porous film separator **electrolytic** capacitor; **polyvinylidene** fluoride polymer battery separator; **porous** elec insulating **polymer** film separator

IT **Primary** battery separators

Secondary battery separators

(porous dielec. film separators containing polyethylene oxide and/or polypropylene oxide for batteries and capacitors)

IT **Electrolytic** capacitors

(separators for; porous dielec. film separators containing **polyethylene** oxide and/or **polypropylene** oxide for batteries and capacitors)

IT **Polymer electrolytes**

(separators; porous dielec. film separators
containing polyethylene oxide and/or polypropylene
oxide for batteries and capacitors)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-14-7,
Poly(methyl methacrylate) 24937-79-9, Vinylidene fluoride
homopolymer 25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(porous separator film; porous
dielec. film separators containing polyethylene oxide
and/or polypropylene oxide for batteries and capacitors)

L25 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:239069 HCAPLUS Full-text

DOCUMENT NUMBER: 142:298942

TITLE: Method for continuous production of functional
film having porous
resin sheet containing functional
polymer

INVENTOR(S): Hiraoka, Hideki; Kubota, Kouzou; Yamaguchi,
Takeo; Ooya, Nobuo; Harada, Hiroshi

PATENT ASSIGNEE(S): Toagosei Co., Ltd., Japan

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|---------------------------|
| WO 2005023921 | A1 | 20050317 | WO 2004-JP6389 | 20040512 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2005076012 | A | 20050324 | JP 2003-311841 | 20030903 |
| CA 2537795 | A1 | 20050317 | CA 2004-2537795 | 20040512 |
| PRIORITY APPLN. INFO.: | | | | JP 2003-311841 A 20030903 |
| | | | | WO 2004-JP6389 W 20040512 |

- AB A method comprises (i) a step wherein a porous resin sheet (a porous **polyethylene** sheet or the like) is continuously conveyed and impregnated with a polymer precursor having a functional group (2-acrylamide-2-methylpropanesulfonic acid or the like), to attach the polymer precursor to the porous resin sheet, (ii) a polymerization step wherein a **first** and a **second** resin films (both are a polyester film or the like) are continuously supplied to both the surfaces of the porous sheet having been impregnated with the above polymer precursor and containing the polymer precursor attached thereto, in such a manner that the resin films are contacted with the surfaces and the porous sheet is sandwiched between the two resin films, and then the polymer precursor is polymerized (by the irradiation with an active energy ray, and the like), (iii) a film releasing step, (iv) and a polymer removing step. Thus, a **polyethylene** porous film was continuously impregnated with a solution comprising 2-acrylamido-2-methylpropanesulfonic acid 90, N,N'-methylenebisacrylamide 10, Darocure 1173 2, a surfactant 2, and water 100 parts, each **polyethylene** terephthalate film with oxygen permeability 385 mL/m²·24 h·MPa was placed on both side of the precursor-attached porous film, irradiated with a mercury lamp, removed two **polyethylene** terephthalate films to give an **electrolyte** membrane with semitransparency, good appearance, proton conductivity 53 S/cm², and methanol permeation flux 0.72 kg/m²·hour.
- IC ICM C08J009-40
- CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
- ST continuous prodn functional **film porous resin sheet**; porous film contg acrylamidomethylpropanesulfonic acid methylenebisacrylamide copolymer electrolyte membrane
- IT Porous materials
(films; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT Polymer electrolytes
(method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT Polyimides, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, laminate with porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-, laminate with porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT Polyolefins
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(porous substrates; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT Films
(porous; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)
- IT 69824-22-2P, 2-Acrylamido-2-methylpropanesulfonic acid-N,N'-methylenebisacrylamide copolymer

RL: IMF (Industrial manufacture); MOA (Modifier or additive use);
 PREP (Preparation); USES (Uses)
 (functional polymer; method for continuous production of functional
films having **porous resin** sheet
 containing functional polymers)

IT 26298-81-7P 26615-45-2P

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP
 (Properties); TEM (Technical or engineered material use); PREP
 (Preparation); USES (Uses)
 (laminate with porous substrate; method for continuous production of
 functional **films** having **porous resin**
 sheet containing functional polymers)

IT 9002-88-4, Polyethylene 603951-77-5, U-Pore UP 3025

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical
 or engineered material use); USES (Uses)
 (porous substrate; method for continuous production of functional
films having **porous resin** sheet
 containing functional polymers)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L25 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:894110 HCAPLUS Full-text

DOCUMENT NUMBER: 142:97389

TITLE: Preparation method of polymer electrolyte
 product for lithium polymer **secondary**
 battery and preparation method for the battery
 using the polymer electrolyte product

INVENTOR(S): Do, Chil Hun; Jin, Bong Su; Jin, Chang Su; Mun,
 Seong In; Yoon, Mun Su

PATENT ASSIGNEE(S): Korea Electro Technology Research Institute, S.
 Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| KR 2001090406 | A | 20011018 | KR 2000-15364 | 200003 25 |
| PRIORITY APPLN. INFO.: | | | | 200003 25 |

AB A method for preparing the polymer electrolyte product for a lithium polymer
secondary polymer and a method for preparing the lithium polymer **secondary** polymer
 using the polymer electrolyte product are provided, to prevent the leakage of
 liquid electrolyte. The preparation method of a polymer electrolyte product
 comprises the steps of: dissolving poly(vinyl chloride) as a matrix polymer into a
first solvent, adding a plasticizer with high b.p., adding silica whose surface is
 coated with an organic material, and mixing them; coating the mixture onto a
 substrate uniformly and drying it to make a polymer electrolyte film that the
first solvent is removed; dipping the polymer electrolyte film into a **second**
 solvent that the plasticizer with high b.p. is dissolved and the matrix polymer is

not dissolved, to remove only the plasticizer, and thereby making a polymer film with many micropores; and dipping the polymer film into a liquid electrolyte containing lithium salts for allowing the liquid electrolyte to soak into the micropores, and thereby obtaining the polymer electrolyte product. Preferably the number mean mol. weight of poly(vinyl chloride) is 10,000-200,000; the particle size of silica is less than 1 μm ; the organic material is silane; the **first** solvent is tetrahydrofuran; the plasticizer is di-Bu phthalate or dioctyl phthalate; and the **second** solvent is methanol or Et ether.

- IC ICM H01M010-40
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- Section cross-reference(s): 38
- ST **secondary** lithium battery polymer **electrolyte**
silica PVC porous composite
- IT Membranes, nonbiological
(composite; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT Porous materials
(films; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT **Secondary** batteries
(lithium; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT Dissolution
(of polymer and plasticizers; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT **Films**
(porous; preparation method of **polymer** electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT Plasticizers
Polymer electrolytes
(preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
- IT 7439-93-2D, Lithium, salts
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(composite with PVC/coated silica; preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of battery using polymer **electrolyte** product)
- IT 9002-86-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(d.p. 162-3247; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method for battery using polymer electrolyte product)
- IT 17341-24-1D, PVC complexes, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of

1 layer

- battery using polymer electrolyte product)
- IT 60-29-7, Diethyl ether, uses 67-56-1, Methanol, uses 109-99-9, Tetrahydrofuran, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (preparation method of polymer electrolyte product for lithium polymer secondary battery and preparation method of battery using polymer electrolyte product)
- IT 84-74-2 117-81-7, Dioctyl phthalate
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
 (preparation method of polymer electrolyte product for lithium polymer secondary battery and preparation method of battery using polymer electrolyte product)
- IT 7631-86-9, Silica, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silane-coated, composite with PVC/Lithium salt complexes; preparation method of polymer electrolyte product for lithium polymer secondary battery and preparation method of battery using polymer electrolyte product)
- IT 7803-62-5, Silane, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silica coated with, composite with PVC/lithium salt complexes; preparation method of polymer electrolyte product for lithium polymer secondary battery and preparation method of battery using polymer electrolyte product)

L25 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:889873 HCAPLUS Full-text

DOCUMENT NUMBER: 142:95120

TITLE: Polymeric electrolyte for electrochemical device using multilayered polymeric film as separator

INVENTOR(S): Ahn, Sun Ho; Hwang, Ji Yeong; Lee, Hyang Mok; Lee, Seung Jin

PATENT ASSIGNEE(S): LG Chem Investment Ltd., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| KR 2001055968 | A | 20010704 | KR 1999-57312 | 199912 13 |
| PRIORITY APPLN. INFO.: | | | | 199912 13 |

AB Provided is a multilayered polymeric film having electrochem. stability, adhesive property with an electrode, electrolytic solution impregnating and stabilizing property, which is produced without extracting or removing plasticizer. And, a method for preparing thereof and a polymeric electrolyte for an electrochem.

device using the multilayered polymeric film as a separator are also provided. The multilayered polymeric film comprises: (i) a porous first polymer layer; and (ii) a gelled second polymer layer of polyvinylidene fluoride-chlorotrifluoroethylene copolymer. The method comprises the steps of: (i) dissolving polyvinylidene fluoride-chlorotrifluoroethylene copolymer in solvent selected from the group consisting of acetone, dimethylacetamide and N-methyl-2-pyrrolidone; and (ii) after coating or impregnating or simultaneously coating and impregnating one side or both sides of a porous polymer film with the solution of the step (i), drying it to form a gelled second polymer layer. The polymer electrolyte system for an electrochem. device comprises: (i) a multilayered polymeric separator comprising a porous first polymeric layer and a gelled second polymer layer of polyvinylidene fluoride-chlorotrifluoroethylene copolymer; and (ii) a liquid electrolyte comprising a salt and an organic solvent.

IC ICM B32B027-28

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 72, 76

L25 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:414438 HCAPLUS Full-text

DOCUMENT NUMBER: 138:404361

TITLE: Secondary nonaqueous electrolyte battery and its manufacture

INVENTOR(S): Segawa, Masazumi

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 2003157898 | A | 20030530 | JP 2001-355042 | 200111 20 |

PRIORITY APPLN. INFO.: JP 2001-355042

200111
20

AB The battery has an anode and/or a cathode containing a 1st porous polymer electrolyte, and a 2nd porous polymer electrolyte layer (a) between the 2 electrodes or (b) on both sides of a separator; and is obtained by adhering (a) the electrode-electrolyte or (b) the cathode-electrolyte, separator-electrolyte and anode-electrolyte with heat treatment; where the battery satisfies $(T2-4) \leq T1 \leq (T2+5)$ and $T3 \geq (T2+10)$, [T1 = heat treatment temperature; T2 = initial m.p. of the polymer electrolyte layer observed by DSC; and T3 = reaction peak temperature].

IC ICM H01M010-40

ICS H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST porous polymer electrolyte secondary battery manuf; heat treatment DSC specification

IT Secondary batteries

(lithium; manufacture of electrodes containing porous polymer electrolytes for secondary lithium batteries)

IT Battery electrolytes

(manufacture of electrodes containing porous polymer electrolytes for secondary lithium batteries)

IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)
 (manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7440-50-8, Copper, uses
 RL: DEV (Device component use); USES (Uses)
 (anode collector; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (cathode collector; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 143623-51-2, Cobalt lithium nickel oxide (Co_{0.15}LiNi_{0.85}O₂)
 RL: DEV (Device component use); USES (Uses)
 (cathode; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solution; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
 24937-79-9, PVDF
 RL: DEV (Device component use); USES (Uses)
 (manufacture of electrodes containing porous polymer **electrolytes** for **secondary** lithium batteries)

L25 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:71260 HCAPLUS Full-text

DOCUMENT NUMBER: 138:138410

TITLE: Porous polyolefinic films containing particles and production method thereof

INVENTOR(S): Kishii, Yutaka; Kii, Keisuke; Uetani, Yoshihiro; Fujita, Shigeru; Yamaguchi, Mutsuko

PATENT ASSIGNEE(S): Nitto Denko Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | |
| JP 2003026847 | A | 20030129 | JP 2001-214619 | 20010716 |
| PRIORITY APPLN. INFO.: | | | JP 2001-214619 | 20010716 |

AB Title films useful for separators for nonaq. **electrolyte** batteries comprise polyolefin resins with weight average mol. weight $\geq 5 + 105$ and particles with

particle diameter 0.001 - 10 μm , and have surface pore size 0.01-1 μm , pore size of the surface fractured in the thickness direction 0.1 - 10 μm , and pore size ratio of surface/surface fractured in the thickness direction < 0.2. Thus, GUR 4012 (**polyethylene**) with m.p. 135° and weight average mol. weight 1 + 106 14, MG 35 (styrene-acrylate copolymer particle) with particle diameter 1 μm 8, and liquid paraffin 78 parts were kneaded at 160° and extruded at 160° to give a sheet-shaped article, which was preheated at 115°, a solvent was removed at 120°, stretched 2-folds in the width and longitudinal direction resp. to give a 14 μm -thick porous film with porosity 53%, ion flow velocity 0.38 mmol/min, **electrolyte** impregnation ratio 32%, polymeric **electrolyte** impregnation ratio 43%, surface pore size 0.05 μm , pore size of the surface fractured in the thickness direction 4.42 μm , and pore size ratio of surface/surface fractured in the thickness direction 0.01, which was used as separator for a nonelectrolyte cell showing discharge capacity 1.42 mAh.

IC ICM C08J009-26
ICS C08J009-28; C08K003-00; C08L023-06; C08L101-00; H01M002-16; H01M010-40
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76
ST porous polyolefin film contg. particle prepn; polyethylene styrene acrylate copolymer resin particle porous film prepn
IT **Primary** batteries
 Secondary batteries
 (nonaq. electrolyte; preparation of porous polyolefinic films containing particles useful for battery separators)
IT **Primary** battery separators
 Secondary battery separators
 (nonaq.; preparation of porous polyolefinic films containing particles useful for battery separators)
IT **Polymer** electrolytes
 (preparation of porous polyolefinic films containing particles useful for battery separators containing)
IT 79-10-7D, Acrylic acid, ester, polymers with styrene 100-42-5D, Styrene, polymers with acrylates
RL: MOA (Modifier or additive use); USES (Uses)
 (**resin** particle; preparation of **porous** polyolefinic **films** containing particles useful for battery separators)

L25 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:812223 HCAPLUS Full-text
DOCUMENT NUMBER: 137:339975
TITLE: Nonaqueous electrolyte **secondary** battery having **porous polymer layer** on depolarization **layer** and manufacture thereof
INVENTOR(S): Tagawa, Masahiro; Kitano, Shinya; Hasumi, Takeshi
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

JP 2002313429

A

20021025

JP 2001-120516

200104
19

PRIORITY APPLN. INFO.:

JP 2001-120516

200104
19

AB The nonaq. electrolyte **secondary** battery has a depolarization layer on a pos. electrode and/or a neg. electrode which has a porous polymer on the surface and in the pores, wherein a weight of the porous polymer per unit volume on the surface is higher than that in the pores and a thickness of the porous polymer on the surface is set at 0.1-6 μm . The process comprises the steps of (1) applying an active agent on a metal foil current collector to form an electrode, (2) pressing the electrode, (3) impregnating the electrode with a polymer solution which has a viscosity $\geq 1,000$ cps and contains a 1st solvent, (4) extracting the 1st solvent in the polymer on the electrode using a 2nd solvent, and (5) drying the electrode.

IC ICM H01M010-40
ICS H01M004-02; H01M004-04; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **porous polymer** depolarization layer
nonaq electrolyte **secondary** battery

IT **Secondary** batteries
(**porous polymer** in depolarization
layer of nonaq. electrolyte **secondary** battery)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); EPR (Engineering process); PEP
(Physical, engineering or chemical process); PROC (Process); USES
(Uses)
(**porous polymer** in depolarization
layer of nonaq. electrolyte **secondary** battery)

IT 9011-14-7, PMMA 9011-17-0, Hexafluoropropylene-vinylidene fluoride
copolymer 25014-41-9, **Polyacrylonitrile**
25322-68-3, PEO
RL: DEV (Device component use); EPR (Engineering process); PEP
(Physical, engineering or chemical process); PROC (Process); USES
(Uses)
(**porous polymer** in depolarization
layer of nonaq. electrolyte **secondary**
battery)

L25 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:672608 HCAPLUS Full-text

DOCUMENT NUMBER: 137:202356

TITLE: Ion-conducting adhesive **porous**
films, polymer gelelectrolytes from them, their manufacture, and
applicationsINVENTOR(S): Yamaguchi, Mutsuko; Uetani, Yoshihiro; Kii,
Keisuke; Yamamura, Takashi; Nakamura, Seiji;
Tabuchi, Masato

PATENT ASSIGNEE(S): Nitto Denko Corp., Japan; Daiso Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------------|
| ----- | ---- | ----- | ----- | |
| JP 2002249742 | A | 20020906 | JP 2001-358853 | 200111 26 |
| JP 2007035646 | A | 20070208 | JP 2006-237184 | 200609 01 |
| PRIORITY APPLN. INFO.: | | | JP 2000-373466 | A 200012 07 |
| | | | JP 2001-358853 | A3 200111 26 |

- AB The films, showing 180° peeling strength ≥ 2 N/20 mm, comprise **porous** base films and **polymers** having poly(meth)acrylate, poly(ethylene oxide), poly(propylene oxide), poly(ethylene oxide/propylene oxide), polyphosphazene, poly(vinyl ether), or polysiloxane main chains and oligo(alkylene oxide) side chains. Polymer gel **electrolytes** manufactured using them are useful for batteries and capacitors. Thus, porous ultrahigh-mol.-weight **polyethylene** film was coated with a composition containing glycidyl methoxyethoxyethyl ether-allyl glycidyl ether-ethylene oxide (49:51:1) copolymer and Blemmer PDE 100, soaked in a solution containing LiClO₄, and heated to give a gel showing conductivity $8.0 + 10^{-4}$ S/cm.
- IC ICM C09J007-02
ICS C08J009-36; C09J009-02; C09J171-00; C09J183-12; C09J201-00;
H01B001-06; H01B013-00; H01G009-02; H01G009-035; H01G009-038;
H01M010-40; C08L101-00
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76
- IT Porous materials
(**films**; ion-conducting adhesive **porous**
films for **polymer** gel electrolytes)
- IT Capacitors
Electrolytes
Primary batteries
Secondary batteries
(ion-conducting adhesive **porous** films for
polymer gel electrolytes)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(oligo(alkylene oxide) side chain-containing; ion-conducting adhesive
porous films for **polymer** gel
electrolytes)
- IT Polyoxyalkylenes, uses
Polyphosphazenes
Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(oligo(alkylene oxide) side chain-containing; ion-conducting adhesive
porous films for **polymer** gel
electrolytes)
- IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**porous** base **film**; ion-conducting adhesive
porous films for **polymer** gel
electrolytes)
- IT Films

(porous; ion-conducting adhesive porous films for polymer gel electrolytes)

IT 7791-03-9, Lithium perchlorate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolyte; ion-conducting adhesive porous films for polymer gel electrolytes)

IT 115383-11-4P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (ion-conducting adhesive porous films for polymer gel electrolytes)

IT 454171-46-1P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (ion-conducting adhesive porous films for polymer gel electrolytes)

IT 9002-84-0, PTFE
 RL: TEM (Technical or engineered material use); USES (Uses)
 (porous base film; ion-conducting adhesive porous films for polymer gel electrolytes)

IT 9002-88-4, Polyethylene
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ultrahigh-mol.-weight, porous base film; ion-conducting adhesive porous films for polymer gel electrolytes)

L25 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:499574 HCAPLUS Full-text

DOCUMENT NUMBER: 137:35458

TITLE: Crosslinked or modified polymeric porous films as separators for

INVENTOR(S): Kenichiro, Kami; Hiroshi, Ueshima; Ryuichirou, Shinkai; Norikazu, Hosokawa; Manabu, Yamada; Hideo, Amaki; Tomoaki, Tamura

PATENT ASSIGNEE(S): Denso Corp., Japan
 SOURCE: Fr. Demande, 75 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. ----- | KIND ---- | DATE ----- | APPLICATION NO. ----- | DATE |
|------------------------|--------------|---------------|--------------------------|-------------------|
| FR 2814284 | A1 | 20020322 | FR 2001-12110 | 200109 19 |
| JP 2002170541 | A | 20020614 | JP 2001-145341 | 200105 15 |
| PRIORITY APPLN. INFO.: | | | JP 2000-287145 | A 200009 21 |
| | | | JP 2001-145341 | A 200105 15 |

JP 2000-141476

A

200005

15

- AB Non-swelling polymeric separators for batteries with non-aqueous **electrolytes** are prepared by crosslinking or modifying a **porous polymer film** with compds. that formed the crosslinks or added chains by at least 2 carbon atoms away from the linking units between the monomers (e.g., the ester linkage of polyesters). The polymeric film can be selected from polybenzimidazoles, **polyimides**, polyether-**polyimides**, polyamide-**polyimides**, polyphenylene sulfides, polyphenylene oxides, polyether-**polysulfones**, **polysulfones**, polyether-polyketones, aramides, saturated polyesters, polyoxymethylenes, etc. Suitable crosslinking agents or modifiers include acrylates, vinyl compds., and functionalized (unsatd.) alkoxysilanes.
- IC ICM H01M010-38
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- IT Polysiloxanes, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(acrylic, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT Polyamide fibers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(aramid, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT Polyesters, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(aromatic, Vylon KS001, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT **Primary** battery separators
Secondary battery separators
(crosslinked or modified **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT Fluoropolymers, uses
Polyamides, uses
Polybenzimidazoles
Polyesters, uses
Polyimides, uses
Polyoxymethylenes, uses
Polyoxyphenylenes
Polysulfones, uses
Polythiophenylenes
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT Battery electrolytes
(nonaq.; crosslinked or modified **polymeric porous films** as separators for batteries with nonaq. electrolytes)
- IT **Polyimides**, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or

- reagent); USES (Uses)
 (polyamide-, crosslinked or modified, battery separators;
polymeric porous films as separators
 for batteries with nonaq. **electrolytes**)
- IT **Polyimides**, uses
 Polyketones
Polysulfones, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (polyether-, crosslinked or modified, battery separators;
polymeric porous films as separators
 for batteries with nonaq. **electrolytes**)
- IT Polyamides, uses
 Polyethers, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (polyimide-, crosslinked or modified, battery separators; **polymeric porous films**
 as separators for batteries with nonaq. **electrolytes**)
- IT Polyethers, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (polyketone-, crosslinked or modified, battery separators;
polymeric porous films as separators
 for batteries with nonaq. **electrolytes**)
- IT Acrylic polymers, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (polysiloxane-, crosslinking or modifying agent;
polymeric porous films as separators
 for batteries with nonaq. **electrolytes**)
- IT Polyethers, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (polysulfone-, crosslinked or modified, battery separators; **polymeric porous films**
 as separators for batteries with nonaq. **electrolytes**)
- IT 2530-85-0, γ -(Methacryloxypropyl)trimethoxysilane
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (KBM503, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with
 nonaq. **electrolytes**)
- IT 4369-14-6, 2-Propenoic acid, 3-(trimethoxysilyl)propyl ester
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (KBM5103, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with
 nonaq. **electrolytes**)
- IT 1025-15-6, Triallyl isocyanurate
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (TAIC, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with
 nonaq. **electrolytes**)
- IT 9016-80-2, Poly(methylpentene) 9020-73-9, **Polyethylene**
 naphthalate 24937-79-9, **Poly(vinylidene fluoride)** 24968-11-4, **Polyethylene** naphthalate
 24968-12-5, Polybutylene terephthalate 25038-59-9,
Polyethylene terephthalate, uses 26062-94-2, Polybutylene

terephthalate 28779-82-0, Polybutylene naphthalate 51806-50-9,
Polybutylene naphthalate

RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)

(crosslinked or modified, battery separators; **polymeric
porous films** as separators for batteries with
nonaq. **electrolytes**)

IT 75-94-5, Vinyltrichlorosilane 78-08-0, Vinyltriethoxysilane
97-90-5, Ethylene glycol dimethacrylate 131-17-9, Diallyl
phthalate 1067-53-4, Vinyltris(β -methoxyethoxy)silane
1321-74-0, Divinylbenzene, uses 1337-81-1, Vinylpyridine
2768-02-7, Vinyltrimethoxysilane 3030-60-2, Allyl isocyanurate
3290-92-4, Trimethylolpropane trimethacrylate 6294-79-7, Diallyl
isocyanurate 21142-29-0, γ -(Methacryloxypropyl)triethoxysila
ne 25013-15-4, Vinyltoluene 65100-04-1, γ -
(Methacryloxypropyl)methyldiethoxysilane
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)
(crosslinking or modifying agent; **polymeric
porous films** as separators for batteries with
nonaq. **electrolytes**)

L25 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:143078 HCAPLUS Full-text

DOCUMENT NUMBER: 136:201311

TITLE: Multicomponent composite film and method for
preparing the same

INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho;
Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun;
Lee, Sang-Young; Song, Heon-Sik; Park,
Soon-Yong; Kyung, You-Jin; Ahn, Byeong-In

PATENT ASSIGNEE(S): LG Chemical Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|--------------|
| WO 2002015299 | A1 | 20020221 | WO 2001-KR1374 | 200108 11 |
| W: CN, JP, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| KR 2002071203 | A | 20020912 | KR 2001-11191 | 200103 05 |
| EP 1310005 | A1 | 20030514 | EP 2001-958588 | 200108 11 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR | | | | |
| JP 2004506542 | T | 20040304 | JP 2002-520328 | 200108 11 |

| | | | | |
|------------------------|----|----------|----------------|----------|
| JP 3885100 | B2 | 20070221 | | |
| US 2002187401 | A1 | 20021212 | US 2002-110047 | |
| | | | | 20020405 |
| JP 2006289985 | A | 20061026 | JP 2006-135816 | |
| | | | | 20060515 |
| PRIORITY APPLN. INFO.: | | | KR 2000-46735 | A |
| | | | | 20000812 |
| | | | KR 2001-11191 | A |
| | | | | 20010305 |
| | | | JP 2002-520328 | A3 |
| | | | | 20010811 |
| | | | WO 2001-KR1374 | W |
| | | | | 20010811 |

AB The present invention provides a multi-component composite film comprising (a) polymer support layer (e.g., **polypropylene**); and (b) **porous** gelable **polymer layer** (e.g., **polyvinylidene fluoride**) which is formed on one side or both sides of the support layer of (a), wherein the support film of (a) and the gelable polymer layer of (b) are unified without the interface, a method for preparing the same, and a polymer **electrolyte** system applied the same.

IC ICM H01M002-16

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 52

IT Fuel cells

Polymer electrolytes

Primary batteries

Secondary batteries

Sensors

(multicomponent composite film and method for preparing the same)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:420559 HCAPLUS Full-text

DOCUMENT NUMBER: 133:32683

TITLE: Fuel cell electrodes and their manufacture

INVENTOR(S): Hitomi, Shuji

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|--------|
| ----- | ---- | ----- | ----- | |
| JP 2000173624 | A | 20000623 | JP 1999-78885 | 199903 |

| | | | | |
|------------------------|----|----------|------------------|--------|
| DE 10004955 | A1 | 20000817 | DE 2000-10004955 | 24 |
| | | | | 200002 |
| | | | | 04 |
| US 7147957 | B1 | 20061212 | US 2000-497515 | 200002 |
| | | | | 04 |
| PRIORITY APPLN. INFO.: | | | JP 1998-296157 | A |
| | | | | 199810 |
| | | | | 03 |
| | | | JP 1999-29045 | A |
| | | | | 199902 |
| | | | | 05 |
| | | | JP 1999-78885 | A |
| | | | | 199903 |
| | | | | 24 |
| | | | JP 1999-78889 | A |
| | | | | 199903 |
| | | | | 24 |

AB The electrodes have a catalyst **layer** containing a solid **polymer** electrolyte on a **porous** conductive substrate, where the substrate contains a porous resin. The electrodes are prepared by: impregnating a porous conductive material with a solution of a resin dissolved in a 1st solvent, immersing the impregnated material in a 2nd solvent miscible with the 1st solvent but insol. for the **resin** to form a **porous resin layer** on the material, and joining the material with an electrolyte containing catalyst layer.

IC ICM H01M004-86
ICS H01M004-88; H01M008-02; H01M008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fuel cell electrodes
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous polymer** coated carbon substrates)

IT Fluoropolymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous polymer** coated carbon substrates)

IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous polymer** coated carbon substrates)

IT 7440-44-0, Carbon, uses 24937-79-9, Poly(**vinylidene fluoride**)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous polymer** coated carbon substrates)

TITLE: Porous polymer film
 as separator for nonaqueous-electrolyte battery
 INVENTOR(S): Ishibashi, Mamoru
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 11086830 | A | 19990330 | JP 1997-241098 | 199709 05 |
| | | | | 199709 05 |

PRIORITY APPLN. INFO.: JP 1997-241098

AB The title film comprises a polar polymer having continuous pores in the film and thickness direction, and the pores at either pair of the opposing end faces are closed. The film absorbs the electrolyte rapidly and has high leakage-preventing ability.

IC ICM H01M002-18
 ICS H01M002-16; C08J009-28

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST polar polymer separator nonaq **electrolyte** battery; porous
 battery separator rapid **electrolyte** impregnation; leakage
 prevention porous battery separator; acrylonitrile polymer battery
 separator; **polyvinylidene fluoride** polymer
 battery separator

IT Porous materials
 (films; porous polar polymer
 film as separator for nonaq.-electrolyte battery for
 rapid electrolyte impregnation and leakage prevention)

IT Primary battery separators
 Secondary battery separators
 (porous polar polymer film as
 separator for nonaq.-electrolyte battery for rapid electrolyte
 impregnation and leakage prevention)

IT Fluoropolymers, uses
 RL: DEV (Device component use); USES (Uses)
 (porous polar polymer film as
 separator for nonaq.-electrolyte battery for rapid electrolyte
 impregnation and leakage prevention)

IT Films
 (porous; porous polar polymer
 film as separator for nonaq.-electrolyte battery for
 rapid electrolyte impregnation and leakage prevention)

IT 9011-17-0, Kynar 2801 24937-79-9, KF 1000 25014-41-9,
 Acrylonitrile homopolymer 26658-88-8,
 Acrylonitrile-methyl.acrylate-sodium methallylsulfonate
 copolymer
 RL: DEV (Device component use); USES (Uses)
 (porous polar polymer film as
 separator for nonaq.-electrolyte battery for rapid electrolyte
 impregnation and leakage prevention)

L25 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1997:61043 HCAPLUS Full-text
 DOCUMENT NUMBER: 126:77478
 TITLE: Nonaqueous electrolyte batteries with single
 sheet porous polymer separators
 INVENTOR(S): Gotanda, Yukihiro; Terao, Yoshiki; Sato, Hiromi
 PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--------------------------------------|------|----------|-----------------|--------------|
| JP 08293296 | A | 19961105 | JP 1995-98224 | 199504 24 |
| PRIORITY APPLN. INFO.: JP 1995-98224 | | | | 199504 24 |

AB The batteries use separators composed of a single porous polymer sheet having 5-50 μm thickness, with the (1-10)- μm thick layer on both sides having porosity 1-10% and the remaining part having porosity 50-95%. The polymer is preferably a polyolefin. These batteries have good performance at high current.

IC ICM H01M002-16
 ICS H01M006-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Primary** battery separators
Secondary battery separators
 (single sheet porous **polymer** separators with low **porosity** surface **layers** for nonaq. electrolyte batteries)

IT 9003-07-0, **Polypropylene**
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (single sheet porous **polymer** separators with low **porosity** surface **layers** for nonaq. **electrolyte** batteries)

L25 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1991:539616 HCAPLUS Full-text
 DOCUMENT NUMBER: 115:139616
 TITLE: Sealed lead-acid batteries
 INVENTOR(S): Tokunaga, Akio
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|------|
| ----- | ---- | ----- | ----- | |

JP 03057166

A

19910312

JP 1989-192202

198907

25

PRIORITY APPLN. INFO.:

JP 1989-192202

198907

25

AB The batteries have spacers between electrodes in an electrode stack and an electrolyte retainer filled between the electrodes and around the stack. The spacers are corrugated acid- and oxidation-resistant synthetic **resin films** having >70% **perforation**, the electrolyte retainer is fine SiO₂ prepared from a **primary** powder having particle diameter 10-40 μm, and the electrolyte is impregnated and retained in the retainer. These batteries have good performance and are easy to manufacture

IC ICM H01M010-10
ICS H01M010-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **secondary**
(sealed, lead-acid, with silica **electrolyte** retainers
and corrugated perforated **polypropylene** spacers)

=> d 126 ibib abs hitstr hitind 1-15

L26 ANSWER 1 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:142811 HCAPLUS Full-text

DOCUMENT NUMBER: 139:244973

TITLE: Studies on modified atmosphere packaging on quality stability of intact or pre-cut welsh onion

AUTHOR(S): Ibaraki, Toshiyuki

CORPORATE SOURCE: Fukuoka Agric. Res. Cent., Chikushino, Japan

SOURCE: Fukuoka-ken Nogyo Sogo Shikenjo Tokubetsu Hokoku (2002), 18, 1-83

CODEN: FSSHEQ; ISSN: 0913-509X

PUBLISHER: Fukuoka-ken Nogyo Sogo Shikenjo

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB Modified atmospheric packaging (MAP) which involves the lowering of oxygen (O₂) and increasing of carbon dioxide (CO₂) content maintains the quality of fresh vegetables and fruits caused by reduced respiration rates, weight loss, chemical component loss, and delay in yellowing. However, the gas composition surrounding fresh commodities is influenced by the respiration rate of the commodity and the gas permeability of the packaging film. Therefore, use of an improper packaging film may induce an off-odor as a result of anaerobic respiration. The objective of this study was to determine the effect of MAP on quality stability of intact or pre-cut Welsh onion (*Allium fistulosum* L.). The respiration rate, the chemical components including reduced ascorbic acid (RAA) and sugar, and the quality stability of Welsh onion harvested in summer (July, '95), autumn (Nov., '95), winter (Jan., '96) and spring (Apr., '96) were investigated during storage at room temperature or at 15°. A quadratic regression equation ($Y = a + b + T + c + T^2$), with high relative coefficient ($R = 0.993-0.995$), was established between respiration rate (mgCO₂·kg⁻¹·hr⁻¹) (Y) and temperature of Welsh onion (°C) (T). At the same temperature of 15°, Welsh onion harvested in winter season showed higher respiration rate than that harvested in summer season. In the Welsh onion harvested in summer and stored at room temperature condition, RAA content decreased markedly and the score of leaf tip withering increased. These indicate that the Welsh onion harvested in summer season and stored at room temperature does not retain good quality. RAA and sugar contents in Welsh onion harvested in winter were kept for 6 days, suggesting that it retains good quality during

storage at room temperature. On the other hand, summer season Welsh onion stored at 15° indicated much better quality stability than that of winter season. There was a correlation between the respiration rate of Welsh onion and quality stability, meaning that the lower was the respiration rate, the higher was the quality stability. Respiration rates in packages with various gas mixts. were measured by use of a closed system. An empirical equation for the respiration rate of Welsh onion was estimated as a function of the O₂ and CO₂ concentration. The equation that was obtained by multiple regression anal. has a significantly high correlation coefficient (0.92) and estimated as follows. $R = 30.40 - 2.06 + [CO_2] + 0.57 + [O_2]$. The effects of several atmospheric composition on respiration, nutrients and quality stability of Welsh onion were investigated during storage at 15°. Carbon dioxide production from Welsh onion under continuous stream of air (the flow rate was 7 liter·hr⁻¹) was 111 mgCO₂·kg⁻¹·hr⁻¹, it was reduced under continuous streams of low oxygen and high carbon dioxide levels. RAA, sugar and chlorophyll retention were better under low oxygen level than that in air. Sensory score of Welsh onion withering leaf tip was reduced under low oxygen levels. From these results, atmospheric compns. such as including 7.6% O₂ and 12.6% CO₂, 4.1% O₂ and 17.1% CO₂ resp., gave better quality stability of Welsh onion while avoiding physiol. injury. Using a math. model employing previous equation of respiration rate, the gas composition inside the plastic film package and shipping container was predicted. A theor. model for atmospheric in a polymeric film package containing fresh commodities and in a shipping container was developed and validated by expts. with or without Welsh onion. The model was of three processes: respiration of fresh commodities, and permeability of polymeric film and of the shipping container. When vacant packages were used, changes in CO₂ and O₂ concns. inside the bi-axial oriented polypropylene (OPP) film package and expanded polystyrene (EPS) container agreed very well with simulated data. The fit indicates the suitability of the proposed model. Changes in O₂ and CO₂ concns. in the EPS container and O₂ concentration in the OPP film package were approximated when Welsh onion was packed in the film package. The predicted O₂ and CO₂ concentration in the film package differed slightly from the exptl. data with a maximal of 1.5% and 1.2%, resp. However, these exptl. and simulated gas concns. correlated significantly well, indicating that the simulation model can be useful for fresh commodities wrapped both with polymeric film and shipping container. This math. model, therefore, is useful for designing MAP system using polymeric film while in shipping containers with gas permeability. Assuming that CO₂, O₂ and N₂ permeability of polymeric film is 4100, 1700 and 1300 (mL·m⁻²·day⁻¹·atm⁻¹), resp., O₂ concentration in polymeric film will be about 7-8% after 48 h. OPP film is widely used for packaging of fresh vegetables in Japan because of its transparency and adaptability for packaging machinery. Generally, the gas permeability of OPP film is too low to maintain the gas conditions suitable for vegetables. If fresh vegetables are wrapped with completely heat-sealed OPP film and shipped at high temperature, off-odors will result and the quality will deteriorate. So, chemical components and quality of Welsh onion wrapped roughly or completely heat-sealed with OPP film were investigated during storage at 5 and 20°. Concns. of O₂ and CO₂ in the roughly heat-sealed packages were the same as in air, whereas O₂ concentration in the completely heat-sealed packages decreased to 2-3% at 20° and to 4-5% at 5°. Contents of RAA and chlorophyll in onion which was roughly sealed and stored at 20° decreased, and withering of leaf tip occurred. This meant that the quality deteriorated severely. However, the contents of RAA and chlorophyll in Welsh onion is which were sealed completely and stored at 20°, and which were sealed roughly or completely and stored at 5°, did not change or only slightly decreased. In Welsh onion sealed completely and stored at 20°, off-odor was detected after 2 days and severely after 7 days and leaf tips began to wither after 7 days, suggesting that quality could be kept only for 4 days storage. In Welsh onion sealed completely and stored at 5°, off-odors and withering of leaf tip was not observed for 9 days, indicating that quality marketability could be kept for that period. The effects of combinations of OPP film packages and shipping containers on quality stability of Welsh onion were investigated under actual conditions. In

an actual transportation, there was only a small difference in the Welsh onion temperature between EPS container and usual corrugated fiberboard container. The result suggests that both materials have the almost same holding temperature effect. On the other hand, the gas permeability of OPP film is too low to maintain the gas conditions suitable for intact Welsh onion. Recently, OPP film with micro-perforations is developed owing to avoid the anaerobic respiration. Gas permeability of this film is determined by film itself and perforation. So adjusting the diameter or number of micro-perforations, gas permeability of this film could be suitable for this vegetable. In an actual transportation, O₂ concentration in the completely heat-sealed OPP film packages in the EPS container decreased to 2%. Therefore, the onion was induced to anaerobic respiration. O₂ concentration in completely heat-sealed OPP film packages with 5 micro-perforations in the corrugated fiberboard container decreased to 4.5% at the container was opened, thereafter increased to 7-9%. Therefore, this film made available to prevent the deterioration caused by anaerobic respiration. So the sugar and chlorophyll contents were comparatively retained. Too many micro-perforations were ineffective, however, because the O₂ concentration in the package was too high to maintain the MAP condition. To determine the method for evaluating the quality of pre-cut Welsh onion, quality of cut onion was examined and compared with elec. conductivity (EC) and potassium contents of **electrolyte** solution extracted from the onion. Quality of cut onions which were stored at 0, 5 and 10° were stable for 6 days. On the other hand, the quality of onions stored at 15 and 20° slightly deteriorated after 4 and 3 days of storage, resp., and thereafter becoming severe. Degree of EC of onions stored at 15 and 20° decreased for **first** 4 and 3 days of storage, resp., and thereafter began to increase, though degree of EC of onions stored at 0, 5 and 10° decreased during storage. The changes in potassium content extracted by homogenization was steady during storage, although the changes in potassium extracted by leakage similar to those in EC stored at 15 or 20°. Considering the relationship between degree of EC or potassium content and quality of cut onion, **electrolyte** leaked from openings when the tissue was collapsed due to decay. So the **electrolyte** leakage was good parameter to evaluate the decay of onion. Moreover, chlorophyll content is a useful parameter to evaluate the quality of cut onion. Chemical components and quality stability of pre-cut Welsh onion wrapped with unperforated or perforated OPP film package were investigated during storage at 10°. The concentration of O₂ in the unperforated OPP film package decreased rapidly and dropped to 2% while CO₂ increase. Therefore the onion was induced to anaerobic respiration. So the ethanol was produced and chemical components were reduced. Moreover the cellular of this onion became water-soaked. O₂ concentration in the OPP film package with too more micro-perforations decreased slightly. So ethanol was not detected and chemical components were decreased. Moreover the quality of this onion decreased and became unmarketable after 6 days of storage. In cut Welsh onion which was packed with perforated OPP film package (with 24 micro-perforations), O₂ concentration in this package was not considered so low as MAP for onion, but decreased and dropped to 10%. So ethanol could not be detected and chemical components could be kept or decreased slightly. Therefore the cut Welsh onion was acceptable for sale for 6 days of storage. These results suggested that MAP is effective technique for maintaining the quality of intact or pre-cut Welsh onion. A theor. model for atmospheric in a polymeric film package containing fresh commodities and in a shipping container was developed. The simulation model can be useful for Welsh onion wrapped both with OPP film and EPS container. The gas permeability of OPP film was too low to maintain the gas condition for intact or pre-cut Welsh onion; an OPP film with micro-perforations was available for avoiding the deterioration caused by anaerobic respiration. It appears the gas composition in the package can extend the shelf-life of the commodity. But too more micro-perforations was ineffective because of the O₂ concentration in the package could not be so low to maintain the MAP condition.

CC 17-10 (Food and Feed Chemistry)

ACCESSION NUMBER: 2001:713842 HCAPLUS Full-text
 DOCUMENT NUMBER: 135:259856
 TITLE: Method of fabrication of polymer electrolyte
 battery of high mechanical strength and high
 heat resistance
 INVENTOR(S): Yamasaki, Mikiya
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. ----- | KIND ---- | DATE ----- | APPLICATION NO. ----- | DATE |
|--|--------------|---------------|--------------------------|-------------------|
| US 2001024756 | A1 | 20010927 | US 2001-815009 | 200103 23 |
| US 6623891 | B2 | 20030923 | | |
| JP 2001273929 | A | 20011005 | JP 2000-87627 | 200003 27 |
| EP 1139479 | A2 | 20011004 | EP 2001-106718 | 200103 16 |
| EP 1139479 | A3 | 20050817 | | |
| EP 1139479 | B1 | 20060726 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| TW 492208 | B | 20020621 | TW 2001-90106569 | 200103 21 |
| CA 2342368 | A1 | 20010927 | CA 2001-2342368 | 200103 26 |
| CN 1316792 | A | 20011010 | CN 2001-116500 | 200103 27 |
| HK 1039405 | A1 | 20070323 | HK 2002-100896 | 200202 05 |
| PRIORITY APPLN. INFO.: | | | JP 2000-87627 | A 200003 27 |

AB A polymer electrolyte battery having a high discharge capacity, a high mech.
 strength, and a high heat resistance is provided. This polymer electrolyte
 battery includes: a polymer electrolyte layer covering an edge face of a pos.
 electrode plate and an edge part of a porous membrane; a polymer electrolyte layer
 covering an edge face of a neg. electrode plate and an edge part of the porous
 membrane; and a polymer electrolyte layer covering an edge face of the porous
 membrane in a manner that connects the polymer electrolyte layer with the polymer
 electrolyte layer.

IC ICM H01M010-40

ICS H01M006-16; H01M006-18

INCL 429303000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 37

IT Battery electrolytes
Primary batteries
 Strength
 Thermal resistance
 (method of fabrication of polymer electrolyte battery of high
 mech. strength and high heat resistance)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 9002-88-4,
Polyethylene 12190-79-3, cobalt lithium oxide colio2
 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (method of fabrication of polymer **electrolyte** battery
 of high mech. strength and high heat resistance)

IT 9003-07-0, **Polypropylene** 52496-08-9,
Polypropylene glycol diacrylate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method of fabrication of polymer **electrolyte** battery
 of high mech. strength and high heat resistance)

L26 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1999:387727 HCAPLUS Full-text
 DOCUMENT NUMBER: 131:21306
 TITLE: Porous films, battery separators using the
 films, and batteries
 INVENTOR(S): Matsushita, Kiichiro; Higuchi, Hiroyuki; Wano,
 Takashi; Ishisaki, Akira
 PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------------|
| ----- | ---- | ----- | ----- | |
| JP 11158304 | A | 19990615 | JP 1998-234740 | 199808 20 |
| PRIORITY APPLN. INFO.: | | | JP 1997-258950 | A 199709 24 |

AB The films, when measured in an organic **electrolyte** solution at .apprx.20°, have a
 membrane resistance $\leq 5 \Omega \cdot \text{cm}^2$, which increased to $\geq 1000 \Omega \cdot \text{cm}^2$ after hot pressing
 for 1 s at 100-130° and 5 kg/cm² for pore sealing.. Preferably, the films have a
 gas permeability $\leq 400 \text{ s}/100 \text{ cm}^3$ and contain 10-80% of a **polyethylene**, having
 crystallinity $\geq 50\%$ and weight average mo. weight 500-10,000, and 20-90% of a
 polymer having a m.p. higher by $\geq 5^\circ$ than that of the **polyethylene**.

IC ICM C08J009-00
 ICS H01M002-16; H01M006-16; H01M010-40; C08L023-04; C08L023-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery separator **porous polymer** blend
film; polyethylene blend porous film separator
 characteristics

IT **Primary** battery separators
 (characteristics of **porous** polyethylene containing
polymer blend **films** for battery separators)

IT 9002-88-4, Polyethylene
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (characteristics of **porous** polyethylene containing
polymer blend **films** for battery separators)

L26 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:586414 HCAPLUS Full-text

DOCUMENT NUMBER: 129:262849

TITLE: Porous films and battery separators with
 improved low-temperature shut-down capability
 therefrom

INVENTOR(S): Wano, Takashi; Nishiyama, Souji; Matsushita,
 Kiichiro

PATENT ASSIGNEE(S): Nitto Denko Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 10237202 | A | 19980908 | JP 1997-42710 | 199702 26 |

PRIORITY APPLN. INFO.: JP 1997-42710

199702
26

AB The title ≥ 3 -layer films, suitable for separators of nonaq. **electrolytic** solns. in batteries, consist of at least (a) a middle layer prepared from mixts. of **polyethylene** (I; melt index ≤ 0.35) and **polypropylene** (II) and (b) layers of II on the outsides of the middle layer and satisfy the relation $2\% \leq \text{I content} < 30\%$. Thus, isotactic II and an 80:20 mixture of HDPE (MI 0.3) and isotactic II were extruded to give a 3-layer film, which was heat-treated at 135° for 60 h, stretched, and shrunk. The resulting porous film showed I 20%, a peel strength of 100 g/10 mm, and a shut-down initiation temperature of 126° .

IC ICM C08J009-00

ICS B32B027-32; H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

IT **Primary** battery separators

(from **porous** multilayer **polymer** films

)

IT **Polymer** blends

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical
 or engineered material use); USES (Uses)

(**porous** multilayer **films** for battery
 separators from)

L26 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:644057 HCAPLUS Full-text

DOCUMENT NUMBER: 125:280714

TITLE: Cylindrical air batteries

INVENTOR(S): Noya, Shigeto; Fujiwara, Takafumi; Watanabe,
 Tomoya; Kubo, Isao; Kobayashi, Shigeo

PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 08222231 | A | 19960830 | JP 1995-24128 | 19950213 |
| JP 3232936 | B2 | 20011126 | | |
| JP 2002063948 | A | 20020228 | JP 2001-205872 | 20010706 |
| JP 3642298 | B2 | 20050427 | | |
| JP 3642297 | B2 | 20050427 | JP 2001-205871 | 20010706 |

PRIORITY APPLN. INFO.: JP 1995-24128 A3
 19950213

AB The batteries use cathodes having a tubular catalyst layer, containing a **polytetrafluoroethylene** dispersed Ni film plated on a current collector, and a gas **permeable porous hydrophobic resin film** on the outside of the catalyst layer. The batteries have a tubular cathode with its lower end inserted in a ring shaped recession of a polymer member, which has a Sn plated brass ring on the inside and fit on a polymer sealing piece. The batteries have a tubular cathode with its open covered with an inside metal cap and an outside metal cap, a tubular separator with a sealed bottom inside the tubular cathode, an anode material free gelled **electrolyte** on the inside of the separator facing the inside of the inside cap, and a gelled Zn anode filled in the remaining part of the separator tube.

IC ICM H01M004-86

ICS H01M004-66; H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **primary**

(structure of cylindrical air batteries for preventing electrolyte leakage)

L26 ANSWER 6 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:500881 HCAPLUS Full-text

DOCUMENT NUMBER: 113:100881

TITLE: Batteries with laminated air-diffusion films

INVENTOR(S): Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|------|
| JP 01267974 | A | 19891025 | JP 1988-96005 | |

198804

19

PRIORITY APPLN. INFO.:

JP 1988-96005

198804

19

AB Batteries using air-diffusion cathodes have air-inlet openings on their cases and a vinyltrimethylsilane-hexamethylcyclotrisiloxane copolymer film supported with ≥ 1 porous film between the cases and the cathodes. Porous **polypropylene** films and nonwoven **polypropylene** fabrics were used as supports in examples. These films prevent **electrolyte** leakage from the batteries and increase their shelf life.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

IT Batteries, **primary**

(air-zinc, with air-diffusion films from vinyltrimethylsilane-hexamethylcyclotrisiloxane **copolymer** and **porous** supports)

L26 ANSWER 7 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:482132 HCAPLUS Full-text

DOCUMENT NUMBER: 113:82132

TITLE: Batteries with laminated air-diffusion films

INVENTOR(S): Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 01267972 | A | 19891025 | JP 1988-96003 | 198804 19 |

PRIORITY APPLN. INFO.:

JP 1988-96003

198804

19

AB Batteries using air-diffusion cathodes have air inlet openings on their battery cases and a vinylphenol-di-Me siloxane block copolymer film supported with ≥ 1 porous films between the inside surface of the cases and the cathodes. Porous **polypropylene** films and nonwoven **polypropylene** fabrics were used as supports. These films prevent **electrolyte** leakage from the batteries and increase the shelf life of the batteries.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **primary**

(air-zinc, air-diffusion films for, containing vinylphenol-di-Me siloxane **copolymer** films and **porous** supporting films)

L26 ANSWER 8 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1989:481388 HCAPLUS Full-text

DOCUMENT NUMBER: 111:81388

TITLE: Air battery

INVENTOR(S): Okazaki, Ryoji; Ito, Zenichiro; Takada, Kanji
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------------------------|------|----------|-----------------|--------------|
| JP 01059782 | A | 19890307 | JP 1987-215647 | 198708 28 |
| PRIORITY APPLN. INFO.: JP 1987-215647 | | | | 198708 28 |

AB The battery containing a gas-diffusion O cathode has a composite film of ≥ 1 microporous film supported by a thin polymethylpentene film inserted between the battery case and the cathode. The microporous film can be a polyolefin (polypropylene or polyethylene), a fluororesin, or a polysulfone, and is on the battery-case side of the composite. The polymethylpentene film can be in direct contact with the cathode or have a porous PTFE film in between. Air batteries using this composite do not show electrolyte leak and have good performance at high and low loads.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **primary**
 (air, polymethylpentene-microporous polymer composites in, for preventing electrolyte leak)

IT Fluoropolymers
 RL: USES (Uses)
 (films, composites of polymethylpentene and microporous, for air batteries)

IT 9016-80-2, Poly(methylpentene)
 RL: USES (Uses)
 (composites of microporous polymer films and, for air batteries)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene
 RL: USES (Uses)
 (films, composites of polymethylpentene and microporous, for air batteries)

L26 ANSWER 9 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1988:634174 HCAPLUS Full-text
 DOCUMENT NUMBER: 109:234174
 TITLE: Alkaline batteries with porous separators
 INVENTOR(S): Ikeda, Konosuke
 PATENT ASSIGNEE(S): Sanyo Duracell Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|------|
| ----- | ---- | ----- | ----- | |

JP 63158741

A

19880701

JP 1986-305021

198612

19

PRIORITY APPLN. INFO.:

JP 1986-305021

198612

19

AB Alkaline Zn-MnO₂ batteries have porous synthetic-resin film separators with or without alkaline-resistant nonwoven cloth of natural or synthetic fibers on the anode side. The film is polyethylene film; and the cloth is made of nylon, vinylon, polypropylene, or cotton fibers. Thus, when discharged through a 3.9-Ω resistor to 0.9-V cutoff, Zn-MnO₂ batteries using 20-μm porous polyethylene separators and a ZnO-saturated 40% KOH electrolyte had a discharge durations of 4.30 and 3.40 h before and after a 30-day storage at 60° vs. 4.44 and 3.46 h for batteries using a 0.1-mm-thick nonwoven vinylon separator. No leak was observed on batteries of the invention after storage, however 20% of the latter batteries showed leak.

IC ICM H01M002-16

ICS H01M006-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Batteries, primary
(separators, porous polyethylene films)

L26 ANSWER 10 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:613606 HCAPLUS Full-text

DOCUMENT NUMBER: 109:213606

TITLE: Lithium batteries with metal-coated separators

INVENTOR(S): Imaizumi, Masahiko; Niso, Kiyoshi; Sasama,
Hiroshi; Okamoto, Osamu; Iwamaru, Futayasu

PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 63143744 | A | 19880616 | JP 1986-290920 | 198612 06 |

PRIORITY APPLN. INFO.:

JP 1986-290920

198612

06

AB Microporous resin films for use as separators in Li batteries have a metal electrochem. alloyed with Li on its anode-facing side. The metal is selected from Al, Sn, Zn, Pb, Bi, Si, Sb, and/or Mg. Thus, a 5-μm Al layer was vapor deposited on a microporous polypropylene separator for use in a button-type Li-MnO₂ battery with a 1M LiClO₄/2:1 (volume) propylene carbonate-MeOC₂H₄OMe electrolyte. The Al layer was electrochem. alloyed with Li prior to assembling into the battery. Batteries of the invention had internal resistances of 10-15 Ω and closed-circuit voltages of 2.45-2.52 V at the end of a 0.2-s discharge through a 560-Ω load at 10° after a 160-h predischarging through

an 18-k Ω load at 25° vs. 15-20 Ω and 2.30-2.42 V for batteries using a sep. 5- μ m Al sheet between the anode and uncoated separator.

IC ICM H01M004-06
ICS H01M004-02; H01M004-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Batteries, **primary**
(separators, polypropylene, with aluminum-lithium alloy layers,
for low resistance)

L26 ANSWER 11 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:593810 HCAPLUS Full-text

DOCUMENT NUMBER: 109:193810

TITLE: Organic-electrolyte batteries with improved separators

INVENTOR(S): Nishino, Shuichi; Izumikawa, Toshihiko

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | --- | ----- | ----- | |
| JP 63155553 | A | 19880628 | JP 1986-302009 | 198612 18 |
| | | | | 198612 18 |

PRIORITY APPLN. INFO.: JP 1986-302009

AB Separators for organic-**electrolyte** light-metal batteries are prepared by winding a ribbon of a separator material into a tube, fixing the seams, bending 1 end of the tube inwardly to form a cup shape, and inserting a circular piece of nonwoven cloth into the tube to seal the cup-shaped bottom. The ribbon can be nonwoven cloth of synthetic **resin** fibers or **porous** synthetic **resin** film. Thus, separators prepared from nonwoven **polypropylene** cloth tubes with nonwoven **polypropylene** cloth sealing the bottom were used in Li-MnO₂ batteries with 1M LiClO₄/propylene carbonate-MeOC₂H₄OMe **electrolyte**. After 120 heating-cooling cycles between -10° and +60°, none of these batteries showed **electrolyte** leak whereas 10 out of 100 control batteries did. Batteries of the invention had an average internal resistance of 7.5 Ω with a standard deviation of 1.0 Ω , vs. 12.6 and 8.6 Ω for control batteries.

IC ICM H01M002-18
ICS H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Batteries, **primary**
(separators, nonwoven polypropylene cloth, manufacture of, for leak prevention and low internal resistance)

L26 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:513480 HCAPLUS Full-text

DOCUMENT NUMBER: 109:113480

TITLE: Lithium battery with porous polymer separator

INVENTOR(S): Okamoto, Osamu; Sasama, Hiroshi; Niso, Kyoshi;
Iwamaru, Futayasu

PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | --- | ----- | ----- | |
| JP 63126159 | A | 19880530 | JP 1986-272402 | 198611 15 |
| PRIORITY APPLN. INFO.: | | | | 198611 15 |

AB A Li battery has a Li-alloyable metal sheet on the separator side of a Li block with the separator made of **microporous resin film** having pore size $<0.3 \mu\text{m}$. The metal is Al, Sn, Zn, Pb, Bi, Si, Sb, and/or Mg. Thus, 2 $25\text{-}\mu\text{m}$ **polypropylene** films having oval pores of 0.1- and $0.04\text{-}\mu\text{m}$ diams. were stacked with long diameter of pores on 1 film perpendicular to that on the other film to form a separator for use in a battery having a Li anode block with an Al sheet on the separator side, a CuO-FeS₂ cathode, and a 1M LiClO₄/2:1 (volume) propylene carbonate-MeOC₂H₄OMe **electrolyte**. Batteries of the invention had an internal resistance of 13-20 Ω , a discharge duration of 560-585 h when discharged through a 2-k Ω load, and none showed short circuiting after a vibration test (JIS C 5025), vs. the resp. values of 12-18 Ω , 280-585 h, and 25 short circuiting out of 1000 batteries using a separator of 1 $30\text{-}\mu\text{m}$ **polypropylene** film having $0.5 + 5.0\text{-}\mu\text{m}$ pores.

IC ICM H01M004-06
ICS H01M002-16; H01M004-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Batteries, **primary**
(separators, polypropylene, lithium)

L26 ANSWER 13 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:199280 HCAPLUS Full-text
DOCUMENT NUMBER: 106:199280
TITLE: Nonaqueous batteries
INVENTOR(S): Kimura, Yukio
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|--------------|
| ----- | --- | ----- | ----- | |
| JP 62055871 | A | 19870311 | JP 1985-195060 | 198509 04 |
| PRIORITY APPLN. INFO.: | | | | 198509 04 |

AB Title batteries have light-metal (Li or Na or its alloy) anodes, cathodes which expand during discharge, **microporous resin-film** separators, **electrolyte** retaining rings above or below separators, and **electrolyte** layers inside the rings. A button-type battery was prepared by using a Cu oxide-10 graphite-5% fluoro-resin cathode, a Li anode, a microporous **polypropylene** separator, and a **polypropylene** ring filled with **electrolyte** of 1M LiClO₄ in propylene carbonate-MeOC₂H₄OMe. This structure prevented the increase of internal resistance due to the removal of **electrolyte** from the separator which was observed in control batteries without the ring.

IC ICM H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

IT Batteries, **primary**
(lithium-copper oxide, nonaq., with **polypropylene**
electrolyte-retaining rings)

IT 9003-07-0, **Polypropylene**

RL: USES (Uses)

(**electrolyte**-retaining rings, in nonaq. lithium-copper
oxide batteries)

L26 ANSWER 14 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1986:504683 HCAPLUS Full-text

DOCUMENT NUMBER: 105:104683

TITLE: Nonaqueous battery

INVENTOR(S): Ubukawa, Satoshi; So, Shinji; Amezutsumi, Toru

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|--------------|
| ----- | ---- | ----- | ----- | |
| JP 61077270 | A | 19860419 | JP 1984-197508 | 198409 20 |

PRIORITY APPLN. INFO.: JP 1984-197508

198409
20

AB A nonaq. battery has an anode of Li, Na or their alloys in an anode case, a cathode that expands during discharge in a cathode case, a **porous resin-film** separator, and a
conductive ring between the cathode and the cathode case defining a space for **electrolyte** storage. Thus, a mixture of FeS₂ 85, graphite 10, and a fluoro-resin powder 5% was pressed at 2 tons/cm² to form a pellet (diameter 11, thickness 1.8 mm), and heated to form a cathode. A stainless steel ring was placed between the cathode and a cathode case, and a 1M LiBF₄/propylene carbonate-MeOC₂H₄OMe **electrolyte** was filled into the storage space. A battery using this cathode structure, a Li anode, and a 0.025-mm-thick porous **polypropylene** separator showed a flat, slowly decreasing discharge voltage for .apprx.600 h when discharged through a 5.6-k Ω load at 20°, vs. a fast voltage drop after .apprx.200-h discharge for a battery without the ring and **electrolyte** between the cathode and the cathode case.

IC ICM H01M006-16

CC 72-3 (Electrochemistry)

Section cross-reference(s): 52

IT Batteries, **primary**

(button-type, iron sulfide-lithium, with stable discharge voltage)

L26 ANSWER 15 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1967:11278 HCAPLUS Full-text

DOCUMENT NUMBER: 66:11278

TITLE: Effect of reaction of water and electrolytes during their counterdiffusion in polymers

AUTHOR(S): Lobanov, Yu. E.; Shterenzon, A. L.

SOURCE: Lakokrasochnye Materialy i Ikh Primenenie (1966), (5), 42-4

CODEN: LAMAAD; ISSN: 0130-9013

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The method usually applied for measuring **electrolyte permeability** through **polymer films** does not consider the influence of counterdiffusion of water. This effect was investigated with high-pressure **polyethylene**, poly(tetrafluoroethylene), and tetrafluoroethylene-vinylidene fluoride copolymer films. The film was clamped between two glass half-cells; one of them was equipped with Pt electrodes and filled with water, the other was filled with HCl or HNO₃ solution. The half-cells were not filled simultaneously, but one after another with a delay of 1-3 hrs. In the 1st stage, the **electrolyte** solution or water penetrated into the dry film, the diffusion being unaffected by counterdiffusion of the other component. In this arrangement, the curves representing the amount of acid passed show a discontinuity corresponding to the effect of incipient counterdiffusion. The rate of acid diffusion decreases from $4.5 + 10^{-4}$ g./hr. to $0.5 + 10^{-4}$ for 3.1 cm.² poly(tetrafluoroethylene) due to interaction of counter-diffusion of water. Similar results were obtained for other films. When the fronts of penetrating liquids meet, mol. associated structures are formed from mols. of water and **electrolyte**. Thus, light-scattering centers appear in the film.

CC 35 (Synthetic High Polymers)

=>